Warambo Bryan

Future of Motion Graphics and Particle Systems

Helsinki Metropolia University of Applied Sciences

Bachelor of Engineering

Media Engineering

Future of Motion Graphics and Particle systems

10 April 2012

Helsinki Metropolia University of Applied Sciences

Author(s) Title Number of Pages Date	Bryan Warambo Future of Motion Graphics and Particle systems 51 Pages 10 April 2012
Degree	Bachelor of Engineering
Degree Programme	Media Engineering
Specialisation option	Audio Visual Technology
Instructor(s)	Erkki Aalto (Senior Lecturer)

The purpose of this research is to study the use of particle systems in motion graphics, which is known to be the most popular graphics tool for multiple animated elements. It is known to be a procedural animation because as the emitter builds up more particles are formed to create a motion effect. At the same time exploring the future of motion graphics and Particle systems connection and the relevance it has in terms of longevity in being a major post-production element in digital media. This research includes a breakdown of how these plug-ins and elements are put together which is known as composition. While expounding more as to why motion graphics will never end but only get better. The main software used in this research will mainly be Adobe after effects and Photoshop.

Keywords	Motion Graphics, After Effects, Trapcode Particular, Particle system.

Contents

Abbreviations and Terms

Compositing

This is the combination of more than one image to produce a single image or video.

2D

Two-dimensional is a visual object that is designed on a platform based in the X and Y-axis plane to define the width and height.

3D

Three-dimensional is an object on a Cartesian coordinate system that has X, Y and Z-axis, the Z-axis being included so as to create depth.

Key Framing

It is a form of animation that allows the assigning of a value at a specific point to create different effects.

Color Correction

It is the process of changing the color temperature of an image or video to achieve different looks, usually done in postproduction.

API

Application Programming Interface is an interface that is meant to interact with other software's

Emitter

It is the source where particles are generated and released.

NLEs

Non-Linear Editing systems

RAM preview

Random Access Memory preview: meaning a short rendering process using as little memory from the computer as possible to preview a result of an unfinished footage.

Frame

Is an individual view of a certain area or space that is part of a succession of displayed views or graphics.

Frame rate

Number of frames displayed per second.

1. Introduction

The word multimedia has an array of definitions depending on the particular field of study between, publishing, broadcasting, audio visual production to say the least; in this case it will be the combination of different graphical elements that is text, graphics and images to display motion. That is where motion graphics applies now, which is basically a technology that was developed to create the illusion of still graphics into motion. It basically allows you to create different types of visual effects in real time, instant results as you implement. Motion graphics is a succession of views that creates movement. It is the most used graphical tool to date it can be seen in every multimedia project, from school presentations, television advertisement, electronic billboards, news titles, movie sequence opener, DVD menus and mostly via the Internet.

It is the most important graphical tool simply because, without motion graphics more than 90 percent of media would not be relevant, the world would just be full of still images on displays changing from on to the other without any type of from implication to guide it through. The purpose of motion is to send out a message using the most common element, which is text. It relies heavily on text because the designer will implement different types of layouts and designs using a software but at the end will have to base the main design around the text because the first reason of making a motion graphics project is for an audience to see and get a message from the end result, so text is the key element while developing a concept related to motion graphics. It creates seamless communication between humans and computers.

The fact that this type of design creates a feeling of emotion to satisfy a need depending on the end result, has attracted a lot of interest from many people who want to do design thus making motion graphics one of the most sought after professions to date, but at the end of the day it is all about how a person can see motion and graphics in composition to create awareness. As one wise man said not all good designers make the best designs.

2. Definition of Motion Graphics

In a nutshell the three elements that are used to create motion graphics vary in this sense, "text is just speech in the form of print it comes in two types formatted which means the font is richer with more font, sizes and color options as compared to unformatted where the character set is limited. Graphics being non-textual information that is displayed and printed, same goes for images the difference between the two non-textual forms are graphics can be described as object and text is described as bitmap formed by individual pixels, with each pixel coded with a fixed number of bits". [12, 31]

"Moving images which is also known as moving pictures and moving graphics well known as computer animation, come in to coin the word motion graphics. Which is usually developed by an image or graphical object on frames, each frame consisting of images or objects that are arranged progressively to create motion." [12, 37] Sound is an option depending on the consumer and target to be achieved; in most cases it is a half and half comparison of whether to use sound or not to achieve a result.

3. History of Motion Graphics

There is no exact time of year when it was invented it was just in different places at different times but no one claimed to have being the first to invent or come up with it, reason being that by this time there where many art forms drawing and painting being the main ways to illustrate though still images. Research shows it began around 1826 with The Thaumatrope which was disc that had an image on both sides with holes on the side that was held by a twirled thread and when the both ends of the thread were pulled the disc would spin and the images on both ends combine to form an image or some type of illusion that was called motion graphics then.

Figure 1 illustrates on of the first many known mediums for motion graphics

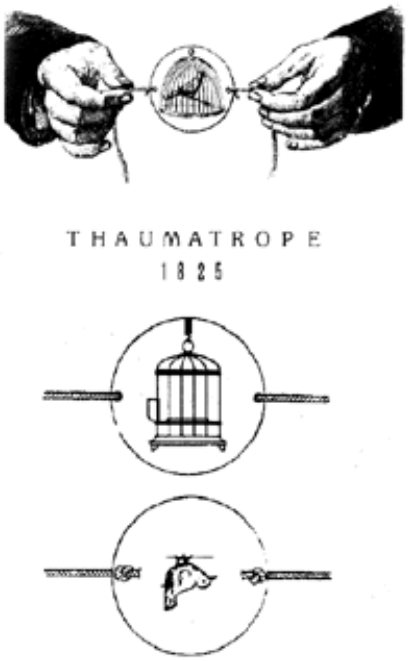

Figure 1. The Thaumatrope created in 1826. [1]

In 1870 came Eadweard Muybridge a photographer was famously known for spear heading the project of motion in Animal Locomotion. Who mainly used a technique called stop motion to make his images move, this would be done by basically using his still images and while using the first type of projector known as Zoopraxiscope, which was a projector that was made in the form of a glass disc and images around it put in the form of still pictures or drawn on to the disc in deferent sequences and to create the illusion of motion the disc would be spun fast and the images come to life creating the motion, [3]. This projector would later influence the enhancement of display technologies during the time to cater for motion graphics purposes.

Figure 2 illustrates the first motion graphics display portraying different images shown on a Zoopraxiscope.

Figure 2. The Zoopraxiscope by Eadweard Muybridge created in 1870. [4]

In later years before the 1900's motion graphics had not developed further for a while, it is then whereby the era of cinematography propelled, the prospects of motion graphics as seen with J Stuart Blackton's Humorous Phases of Funny Faces. Figure 3. As well as the renowned illusionist Georges Melies who combined both his ability to create illusions with the art of cinematography, introducing a new form of motion graphics using the stop motion technique to create the illusion of moving images and special effects. Combining his skill as a magician and developing more skill after his introduction to cinematography changing how people went out to view theatrics in live stages.

It is also believed that it was being made popular around the same time film was being developed too. There were two parties, one deciding to do film by actually recording movement and others doing motion graphics by use of drawing and erasing then changing the character look as they record to achieve a story to create the illusion that a drawn image is actually changing on its own. They claim that the first animated movie was created then in 1906 called "Humorous Phases of Funny Faces" by J Stuart Blackton, which was actually done on a chalkboard changing faces to imply motion or simply animation.

Figure 3 illustrates the first animation recorded on a camera and shown on a display in relation to motion graphics.

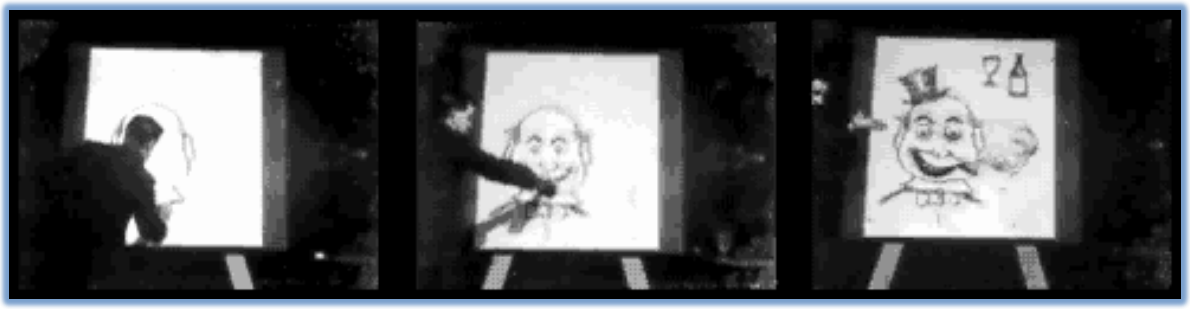

Figure 3. Humorous Phases of Funny Faces by J Stuart Blackton created in 1906. [1]

Figure 4 illustrates one of Melies' best films; this is a scene by which he created a monster, which was being operated by 13 individuals to maximize on the thrill.

Figure 4. Conquest of the Pole, Georges Melies made in 1912. [6]

These developments led to a whole wave of new type of motion graphics, which moved from the theatrics and now solely in to a lot of projection of motion via the projectors. This is where cartoons were being used to enhance motion graphics techniques. The first ever cartoon was Felix the cat in 1919. This was in black and white and with no sound it created humor by actions only. It is known to be the most recognized cartoons in film history, which was derived from the early silent films of Charlie Chaplin. In the late 1920's the arrival of sound in cinematography silently diminished the fame of Felix the Cat and gave birth to Walt Disney's Mickey Mouse, the first cartoon with synchronized sound. This type of cartoon was now being sketched on paper and by using a technique called hand drawn cell animation.

4. Motion Graphic techniques

These are the different techniques of motion graphics that have been evolving over the time period of technology becoming more advanced and by using the many forms of art and mediums to achieve motion. All techniques always start of from a 2D point of view also known as the platform view to the professionals, whereby an idea is put down either on paper or a platform in a computer and by applying the basic method of compositing and making the result synchronize and look as one graphical object or video.

4.1 Hand-Drawn Animation

Mostly known as traditional animation or Hand Drawn Celluloid Animation is the oldest most popular form of animation and still being used to date. It is an art that include the process of animating on paper or celluloid; a clear display which was being used in the early 20th century and later abandoned due to the evolution and acceptance of computer design, usually same as someone writing a script for a movie. As for Hand Drawn animators, it is in the form of a storyboard, which is done by drawing pictures that tell a story of the whole animation. This technique still sees the light of day because Walt Disney is one of the few companies that opted to turn back to hand drawn animation and make their animations via story board so as to correct any imperfections at the same time as they review the story board, after which they transfer it to the digital format for the engineers to come up with the relevant models and designs.

Figure 5. Illustrates the development of a storyboard for a cartoon called Huckleberry hound, a blue dog with a southern American drawl accent before finally adding color and animating it.

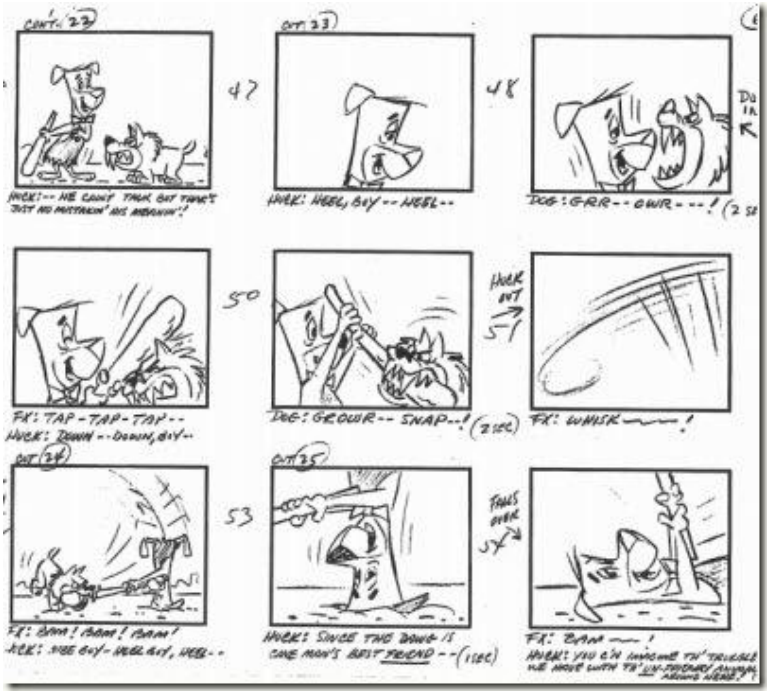

Figure 5. Storyboard from MGM cartoons' huckleberry hound in 1958. [7]

4.2 Stop Motion

Also known, as stop-action is a very long process that needs a lot of patience, accuracy and care. It is mainly done by using different forms of models like dolls or action figures with movable joints, as you photograph each and every movement to create a motion from still images taken from one deciding how to position each model and create an environment, which is known in the motion graphics world as props to create the illusion that the models are moving by themselves, while it is actually still images being used as frames to create motion. An earlier form of stop motion was clay motion; its main props were made from plastacine clay. The most famous clay motion animations to date would be the movie chicken run which was the first full feature length film made from clay.

Figure 5. Illustrates a behind the scenes look at the clay props modeled into characters and positioned for various shots to be digitized into motion

Figure 5. Oscar Award winning Stop motion film maker Nicholas Wulstan's movie the chicken run. [9]

4.3 Cel-Shaded Animation

This is a non-photorealistic rendering technique that switches computer graphics and makes it look like it has been hand drawn. The cel came from the traditional technique used in the earlier days while coming up with cartoons whereby they would use the celluloid which was a clear form that would be drawn on and laid over each other to come up with an animation. Same concept applies only difference this time is that you have to design a 3D object and do three processes of layering by having a black object of the 3D image and a plain colored object and when you combine the two you shade over them or texture to achieve a cel-shaded object. This type of technique is mostly found in video games and claimed to be the most underrated form of animation, though it is beginning to be more appreciated. The reason for this is basically because it is quite complex to achieve the results. It is expected within time that film and TV will take on to cel-shading to achieve a more cartoon hand drawn look.

Figure 6 illustrates the two different results achieved after cel-shading one for a gaming console and the other for a cartoon TV-show.

Figure 6. The Legend of Zelda game for the Nintendo GameCube in 2003 and Family Guy 2009 20th Century Fox Film Corp. [10]

4.4 Drawn-on-Film Animation

Widely known as direct animation because it needs no camera and basically image is drawn onto a photographic film. In most cases the camera is not needed for its frame-by-frame capturing. It is usually done on a 16 mm or a super 8 mm film, which are widths of the film that are commonly used for industrial or educational purposes. The standard speed at which these films run at is 24 frames per second for each second that passes 24 scenes have to be shown within a second to create the motion element.

Invented by Norman McLaren he was also responsible for the crafting of visual sound that was interpreted in the form of musical structures in silent films, abstract film, which would be considered as a child of visual sound, pixilation same concept as stop motion only difference this time would be instead of the animator using props made out of plastacine, "the animator or film maker uses real actors to build a frame-by-frame scene with slight movements". [12] This can be seen in some entertainment videos, where the concept combines live people and graphics to simulate such results and "graphical sound which is the creation of artificial optical sound on a transparent film". [11]

4.5 Computer Animation Technique

The evolution of motion graphics was when it was possible to generate animation using computer graphics. This changed the way people perceived animation and created more opportunities for interested persons to learn through using computer software's and plug-ins to design and animate graphics. Computer animation comes in two forms that are Two Dimension and Three Dimension. Depending on what you want to achieve you can decide what form you want your still image to appear in.

4.5.1 Two Dimension

People who find it hard to understand what 2D means in simple terms would be explained as a flat surface or a plane where a normal image is drawn or designed. Basically 2D refers specifically to the to normal coordinate system known as an axis that is the X and Y-axis that defines a plane and lacks depth. This form of computer animation technique was developed from the old traditional art form that were used in making motion graphics or a simpler form of art like a normal drawing to a painting. So before the computer generated images, no one knew about a platform or 2D image.

The two most common software's used in developing 2D images are Adobe Photoshop, which is used to do a lot of digital image edits and Adobe illustrator, which is mainly used to develop vector images consisting of a lot of geometrical features that give off a very clear image that is not pixilated as compared to digital image in Photoshop which has a bitmap effect or raster graphics, where by you can see the pixels if you zoom into the image. Animation of 2D images can be related mostly with Adobe Flash application that is widely used to make motion using 2D images. The two different ways to animate an image is by scripting using the flash language called action script or key framing whereby you set different still images frame by frame on a timeline to create motion it is like the computer version of stop motion, only thing that does not change is the fact that you will need to use photographed images.

"Flash is based on scalable vector graphics instead of fixed size bitmapped images, and a growing number of Web builders have adopted Flash as a somewhat replacement for HTML. The Shockwave Player, in contrast, doesn't lend itself well to full window presentations because of the bitmapped Director graphics". [15]

4.5.2 Three Dimension

A Cartesian coordinate system that includes all three axes X, Y and Z-axis to achieve 3D. The Z-axis is the axis that makes all the difference between a 2D and 3D image because in this case it is meant to bring about depth in the three dimensional space to make an object have a 360 degree view like a normal eye does. A process called rendering finalizes 3D objects. Rendering is a process whereby the model is turned into a full realistic or finished image by combining all the materials and effects from lighting to texturing and transforming or merging all these elements into one final product. After rendering is when the finished product is then obtained.

3D models are mainly created using a polygon system that defines the shape and size of an object that you will have and to apply movement, like any other living thing a skeleton is needed so as to create different parts and joints to be animated. All this is created in a 3D environment or world.

The advantage of having both 2D and 3D still relevant until today is because of the different forms of art forms but also, all companies that develop 2D or 3D software consider the fact that these two element can still be combined, mostly using a 2D image in a 3D space with other elements to show the dynamic features this computer technique can be applied in motion graphics.

4.5.3 Computer Generated Imagery

Computer Generated Imagery or CGI is the most common used technique blending between 2D and 3D but it mostly applies to instances like video games or if one wants to make an image look different by adding a 3D element in it. The most common use of CGI to date has to be in action movies where a 3D character or object is incorporated with the recorded film during post-production, in most cases through Chroma keying, which is a compositing technique used for adding special effects on to a video by replacing a green or blue background with a video by compositing. It is taken to be the cheapest way to get one person into many locations without leaving the same room.

Figure 7 illustrates the before and after process of Chroma keying from green screen to the replacement image

Figure 7. Iman Crosson in a self-produced YouTube video. [13]

Figure 8 illustrates the process of CGI how different elements are put together using composition to achieve a surreal look. Below is a simulation of player using the moon like a basketball while in the air going to score.

Figure 8. Full moon advertisement by Nike. [14]

5. Adobe After Effects

The most common Motion graphics software used majorly in post-production by combining different elements by layering known as composition for Television or film production process. It is the most widely used software that allows the user to achieve different visual effects through animation. It also allows the use of 2D and 3D elements in the same space including plug-ins and tools within the application or third party plug-ins.

It can be installed in both Windows and Mac OS operating systems depending on ones preference and comfort. After effects is written in C++ programming language the C means classes, which is part of object oriented programming that creates instances of itself and consists of members who enable its instances to have a state and behavior. The two plus signs were added as a programmer joke to show the progression from the first programming language, which was C. This programming language is the most commonly used writing language in developing video games and application software, basically most of the applications that require the input of a command to achieve result will most of the time be based on the C++ programming language.

5.1 Non-Linear Editing system (NLE)

NLEs is meant to provide easy access while editing images or video, this means with the NLEs implemented in today's editing software, it allows the editor or animator to rush though the clips without any interference only difference would apply if a user is on a slow computer with low memory thus dampening the computer and making the editing work hung a lot while doing so leading to a software crush, loosing files, corruption of images or video being edited might occur. In most cases NLEs are convenient in that all that is needed is to find where you want to edit by scrubbing through the clip and finding the frame you want to edit or composite in real time.

While editing in after effects it is advised that one has to pre-compose to allow smooth rendering and also make the work flow better. Pre-composing is the process of reducing the amount of layers while editing and also allows the rendering process to work faster because if you pre compose it opts to pre render a certain selected group of layers. What happens is that as one works on a project, the work tends to pile up and since after effects deals with layers a lot, it tends to have row and rows of layers making it cumbersome. So the easiest way to reduce this is by pre-composing to minimize and make your work neat and easy to render.

A time line based system is the main area of editing in after effects where you can arrange the clip accordingly and edit and can be integrated with other adobe software like Photoshop, Illustrator, flash and most common third party relation to 3D being Cinema 4D. It is credited for its large plug-in support many users have even come up with their own plug-ins that suite After Effects.

5.2 Plugins

It is a software module that enhances a system by adding a special feature needed for a specific task in order to maximize execution. Basically plugins come in different types depending on the need. For instance in browsers the adobe flash player is needed to allow flash applications which covers a large part of music and video content helping it run smoothly on the web as you browse. In the case of ad-wares an ad blocker plugin, it is needed to block pop ups and strange ad-wares to give clear pages while browsing. Many applications are usually rendered useless until a specific plugin is installed to give it more purpose. In a nut shell plugins can also imply the addition of a new functionality. As for Adobe after effects third party plugins can be customized or downloaded depending on what you want to achieve.

Plugins in after effects is known to be for enhancing effect or adding on to a basic image or video to change the look of it. A widely used example would be, while color grading in after effects one uses a plugin known as magic bullet to achieve different moods depending on the theme of your film or clip.

Figure 9 illustrates the different results achieved by the magic bullet looks plug-in in After Effect as well as Adobe Photoshop. The first photo being the normal image without the effects the rest are different types of moods that can be achieved.

Figure 9. Warambo Bryan, Photo taken from an event in 2010.

In the case of this thesis the main plugin that will be talked about is called the Trapcode particular to create particles.

6. Particle Systems

"A means of modeling objects without boundaries, such as fire, cloud, smoke, gas, and water. An object is represented by a collection of elementary particles whose trajectories are traced. These individual particles move in three-dimensional space and change such attributes as color, transparency, and size as a function of time. Accurate modeling of the physics of the system is not attempted; instead heuristic laws are used to approximate the desired effect". [18]

The use of particle systems is a way of modeling objects that are known to be fuzzy, meaning they have motion and do not stick to a distinct shape due to movement but rather stick to a chosen form to define a look. This system is widely known to manage particles in after effects, which is displayed on a screen and moved around. The purpose of the particle is to create depth in motion graphics environment and fill in the 3D space while displaying different contents. Mostly used for decorative purposes. Many particle systems work well with the normal post-production editors. Particle systems can be found in any motion graphics videos from being used for transitions between clips, music synchronizer effect clips use particle system too, making of fire elements. Basically anything that involves small particles to show movement includes a particle system application.

6.1 Emitter

An emitter emits particles, it can be compared to the way a canon or gun works the way bullets all come from one source and can come as much as possible depending on how many bullets you have in the cartridge, same as the emitter its basically the point where you decide how one wants to make the particles move by setting the right parameters to achieve the particles effect. The emitter can be positioned relative to the global position of the particle system. "Various effectors can dynamically change their velocity and orientation. This allows you to create an impression of wind blowing the particles in a particular direction or a black hole sucking them". [19]

Any object can be used as an emitter because the point is simply making a start point for particles to be generated from. The parameters that are set on an emitter is normally a spawning rate meaning how many particles will be discharged at a certain given duration. Particle lifetime is very important because this is where one has to set the right amount of time span to allow particle generation to the death of a particle because of rendering purposes. These parameters create the so-called fuzzy effect that allows fire or string like motions to be created. "A precise numeric value, the artist specifies a central value and the degree of randomness allowable on either side of the center (i.e. the average particle's lifetime might be 50 frames ±20%). When using a mesh object as an emitter, the initial velocity vector is often set to be normal to the individual face(s) of the object, making the particles appear to "spray" directly from each face". [20]

A general idea of how a particle life span works would be when a particle is created it is given a lifetime in frames. As each frame passes by lifetime or lifespan reduces to zero and the particle is destroyed. In some case if the color or most of the time opacity are below a certain threshold depending on the parameters set, the particle becomes invisible and is therefore destroyed. This only applies when playing the clip it does not mean that after the clip is over the clip cannot be viewed, it is just how the particles system works by either duplicating itself to limiting its emission under a set of rules.

Figure 10 illustrates a before and after showing the difference of when the text is just plain with the white background and it looks boring but with the use of particle systems to make an intro, a decorative look is achieved to give life to a normal text font but by applying trapcode particular plugin to make the particle system, it gives the image a more attractive look than if it was only plain. Creating the assumption that particles are light sources, which additively combine according to their color and opacity values. This eliminates the hidden surface problem since particles do not obscure each other but just add more light to a given pixel. It also eliminates shadows, but can be added depending on what design is to be achieved.

MEDIA JUNKIE
BY WARAMBO

BEFORE

AFTER

Figure 10. Company logo intro created in Adobe After Effects, January 2012.

6.2 Rendering a Particle

A particle is usually rendered in the form of a pixel saving on the tasking of the computers power to achieve the result because of its small size the parameters set work in a way that it can duplicate one particle and multiply it to as much as possible depending on the rate at which it should spawn, making it easier to render, allowing a lot to be done using the particle systems. Particles are rendered in the form of meatballs, "which is a digital modeling technique for representing "blobby" shapes as aggregations of spheres and an interpolated smoothly curved surface covering them". [21] This allows the end results to achieve a lot of different forms from liquid to solid shiny particles that is why particle systems is used in creating the various types of fuzzy object.

6.3 Creating a Particle System

This will be a break down the process of how to initiate a stringy logo effect through after effects and trapcode particular plug-in to show a simple logo being transformed into a hairy form using particles.

The first thing in after effects is to create a new composition name it Final comp the resolution will 1280 by 720 frame rate at 25 fps. Composition is where one develops and puts together all the required formats needed to come up with a working motion graphics product it is this composition process whereby one can create different compositions and layer them together to achieve the following results.

Then create another composition with the same resolution but name it wipe1 and click ok, Go to effects and add a linear wipe then drag it on to the wipe1 by changing the linear wipe setting by changing the angle to 90 degrees to wipe the txt off the screen adjust feather to 30 then make key frames for the animation by stating at 4 seconds by setting the transition completion at 0 then moving to 10 seconds and again changing the transition to 100 percent.

Figure 11 illustrates the how the first steps are taken to implement the linear wipe and how to key frame the beginning and the end before applying the particle system because the particles need a form of emitter that is the linear wipe, which will guide the particles through the logo to form a string effect to dissolve the logo.

Figure 11. Key framed linear wipe and arranged compositions

Then drag the Wipe 1 to the "thesisTut", which is the final composition that will render and combine all other composition to layer them. Create a new composition and name it control wipe and in it create a new solid select the color to be white head back to the effects and add the linear wipe again. Adjust the wipe angle to -90 and 80 percent at the 2 second start on the time line then move to 13 seconds and transition completion to 0 percent and drag the composition to the "thesisTut".

Figure 12 advanced setting of how the linear wipe begins and implementing a control wipe that will synchronize both the main wipe and the particle form while arranging them into one composition for particle layering and implementation.

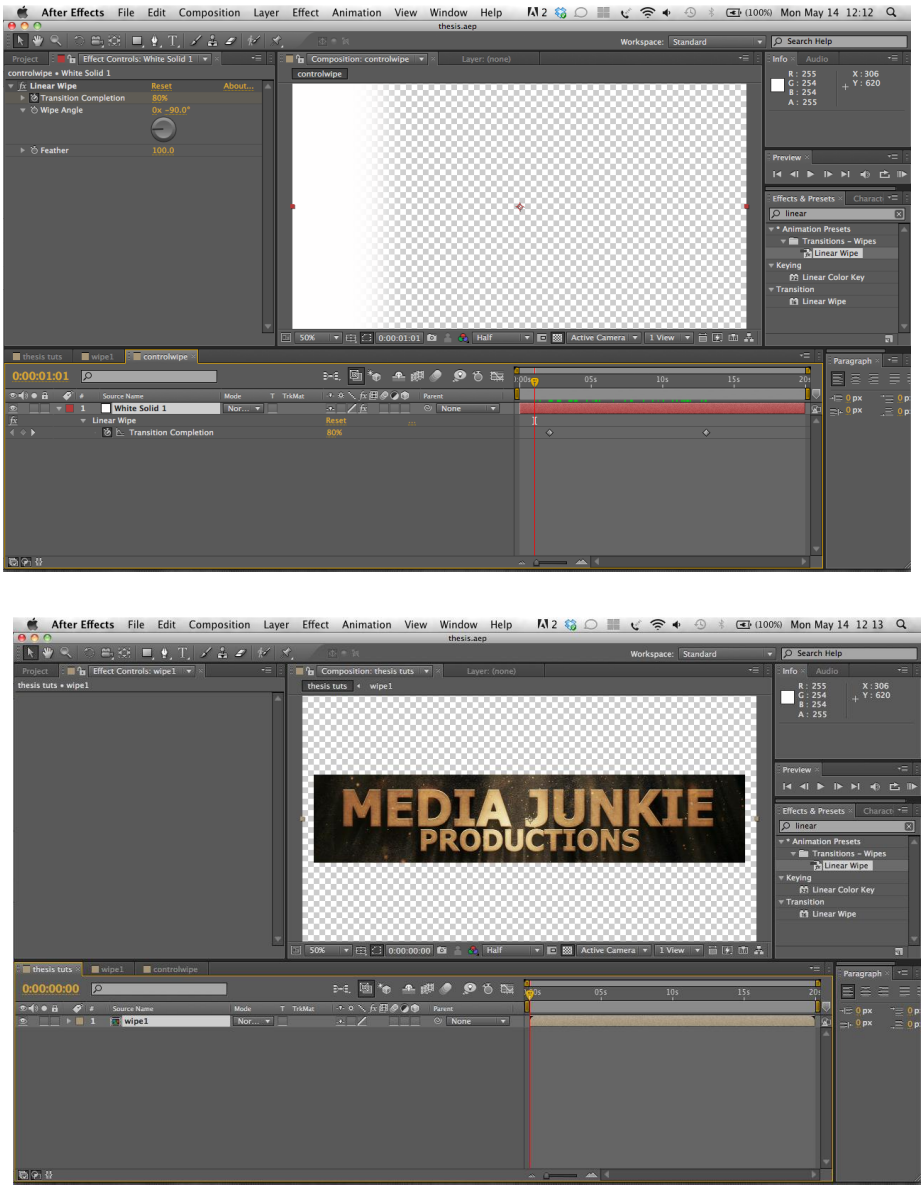

Figure 12. Arranging the two linear compositions into the "main final" composition.

Create a new solid name it Form and any color can be used as the background but preferably white or black will do and now at the effects and preset we look for the form that contains the particles plug-in under trap code drag it onto the form composition then you will a see a grid of particles change the base form from grid to string then adjust the XY to 1280 to 720 increase string Y to 720 and 0 on Z these setting affect how the particles will be spread along a certain set of resolution in this case 1280 by 720 is the standard figure being used to give the particles a definitive space to spawn. The next tab is particle setting where the particle type will remain the same as sphere and the sphere feather amount to be reduced to 1, transfer mode to be normal so that it does not affect the main logo look or change color by diffusing its color values and last but not least layer maps.

Drop down to the color and alpha channel and in the layer tab choose wipe1 so that when the linear wipe is applying effect it makes sure that the particles are only changing the logo into strings and nothing else it is basically prioritizing a special channel that is where the alpha channel is needed in the functionality so choose RGBA to RGBA so as to map it over XY axis of fractal strength and the controlWipe composition to be mapped over XY same goes for disperse settings. These are the main channels that influence the outcome of the particle effect mainly by making the particles to create an illusion that the logo is actually tearing up into strings, while it is just many particles with specific parameters set to make the form of a string and move in a fluid sequence. Where after setting the alpha channels, disperse and twist settings act accordingly to make the fluidness appear realistic.

Figure 13 illustrates the application of the trapcode particular plug-in that shows in the form of particles arranged in a grid and after changing the setting to fit the full screen resolution for better outcome before masking through assigning alpha channels.

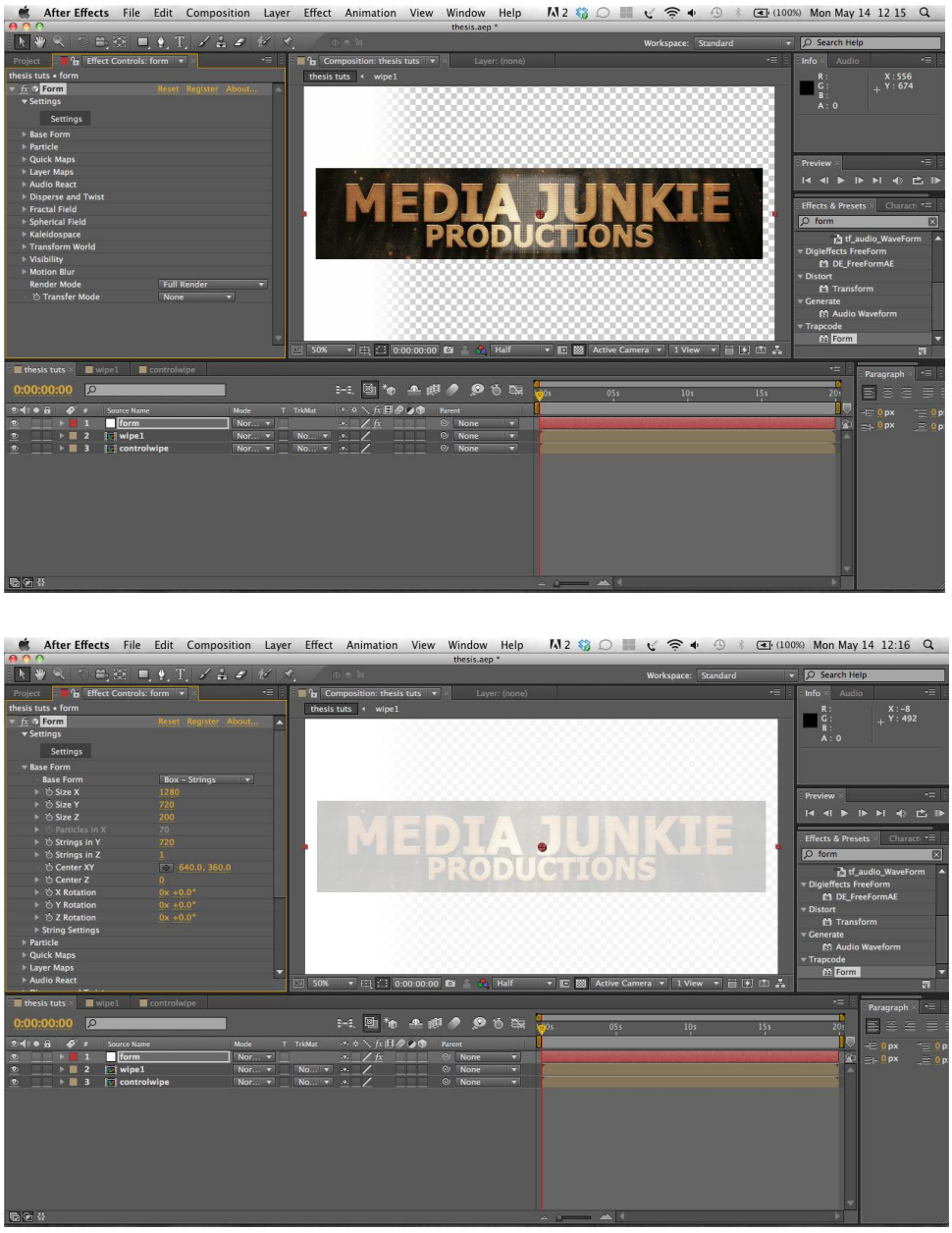

Figure 13.The particle system in the form of a dotted grid and after assigning settings to fit the screen resolution.

Figure 14. Illustrates what happens if the alpha channels are not set to the correct linear wipe it will leave the particles still at the full resolution screen instead of by applying the alpha channel it masks out the unwanted area that will not be included in the final animation.

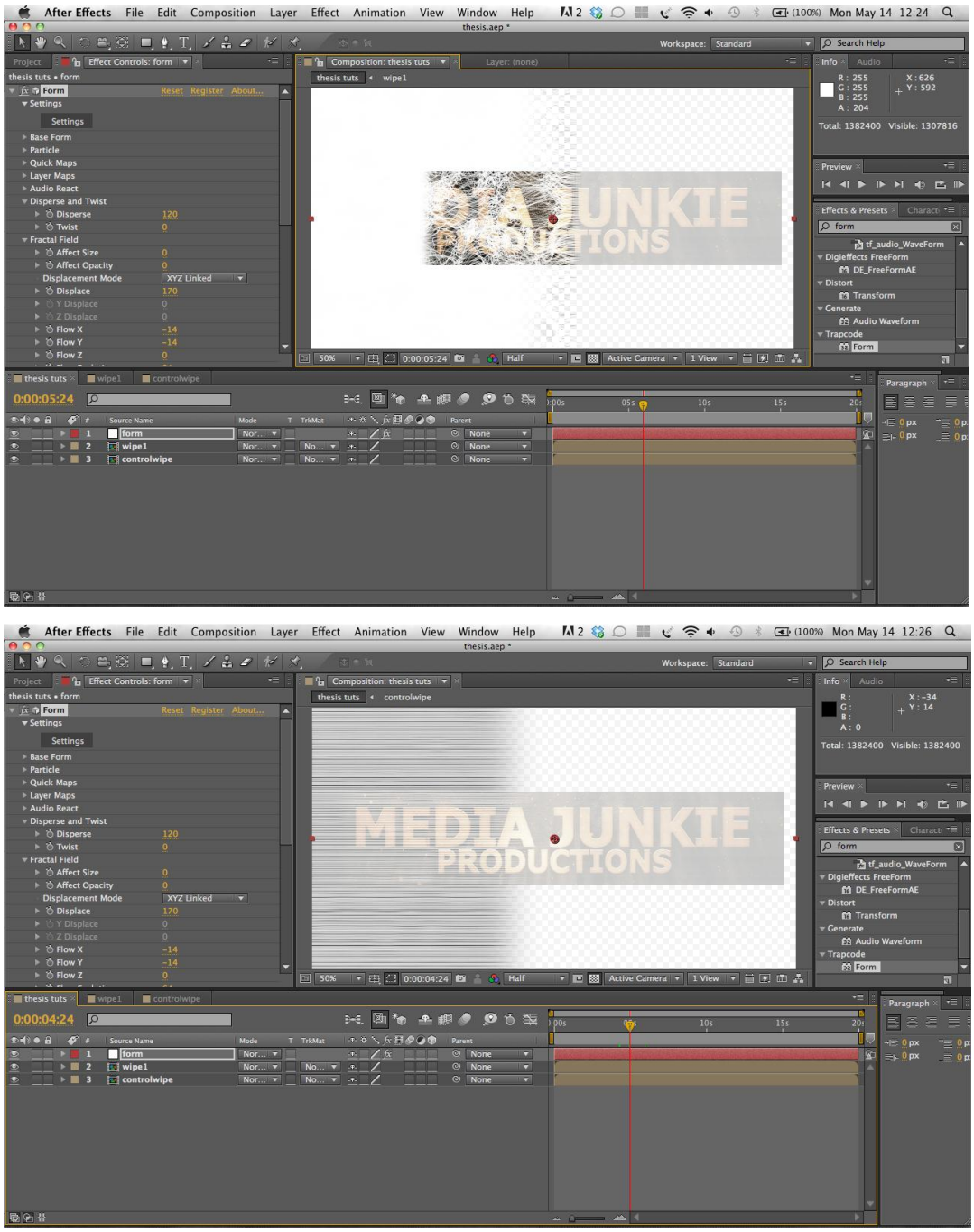

Figure 14.Logo without the main "wipe1" linear wipe

The Disperse and twist mode the first thing to change is in the disperse setting to 120 and the twist to 0. Displace setting value should be 170 and also change the flow X and Y to -14 altogether. The flow evolution should be at 65 and results should start showing after by doing a RAM preview the particles are already changing to look like strings creating a fluid movement to simulate wind blowing. Since the image is being changed by particles, it can affect the look of the logo by changing the color of a few pixels because particles change color depending on the space implemented. The best way is to reuse the original image putting it on top of the logo that was being worked on and applying a linear wipe according to the same way the other "Wipe1" and "controlWipe" where key framed to give the original effect that the particles have not affected anything just added the decorative element needed.

Figure 15 illustrates the final product before eyeing out the wipe1 to be left with the controlWipe and the form on to maximize on the final look after rendering the main composition.

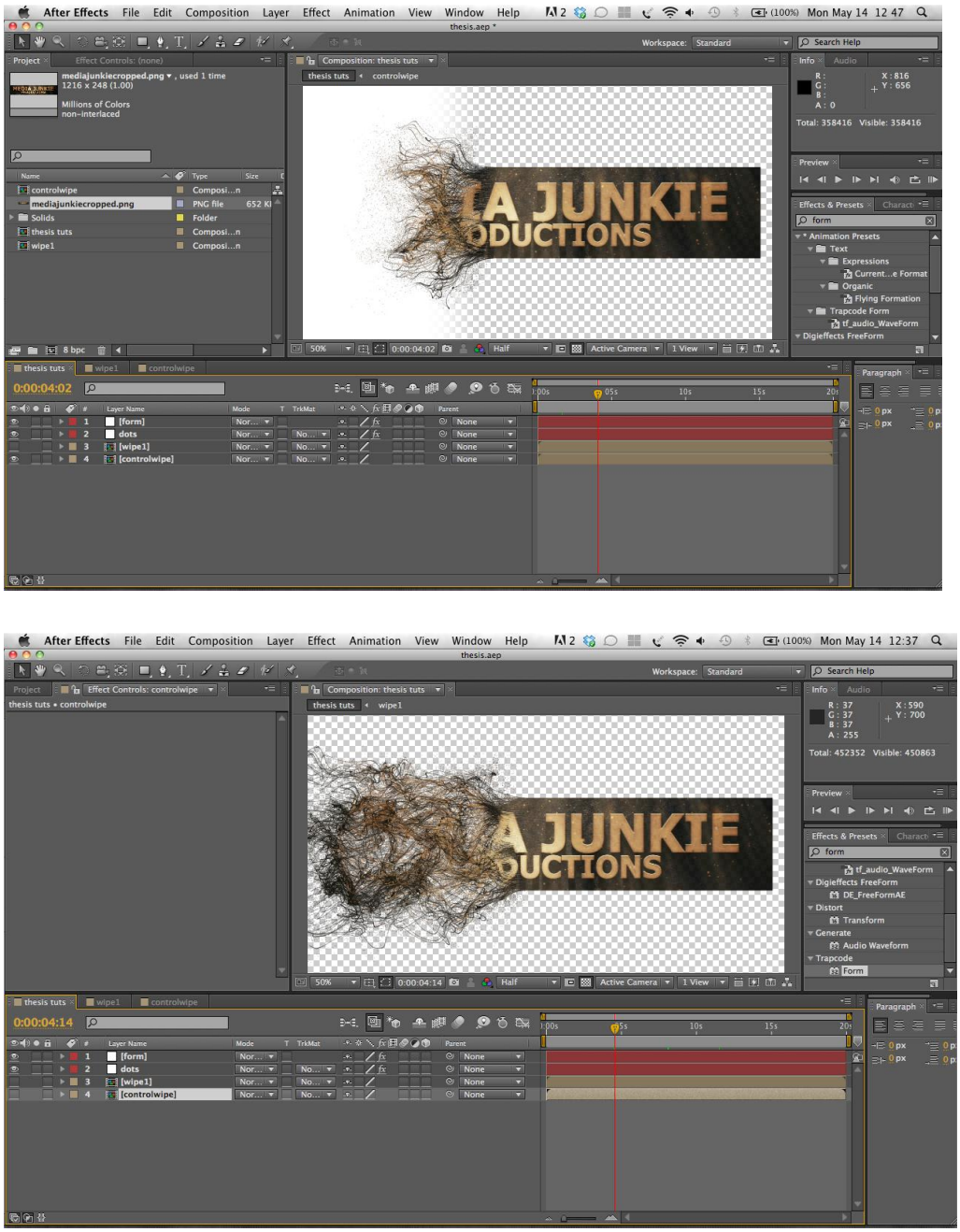

Figure 15.Before applying render settings and eyeing out the main wipe “wipe1”.

Figure 16 is the final product after rendering and adding a few highlights to make the video clip look presentable and achieving the effect used by particle systems using a plugin called trapcode.

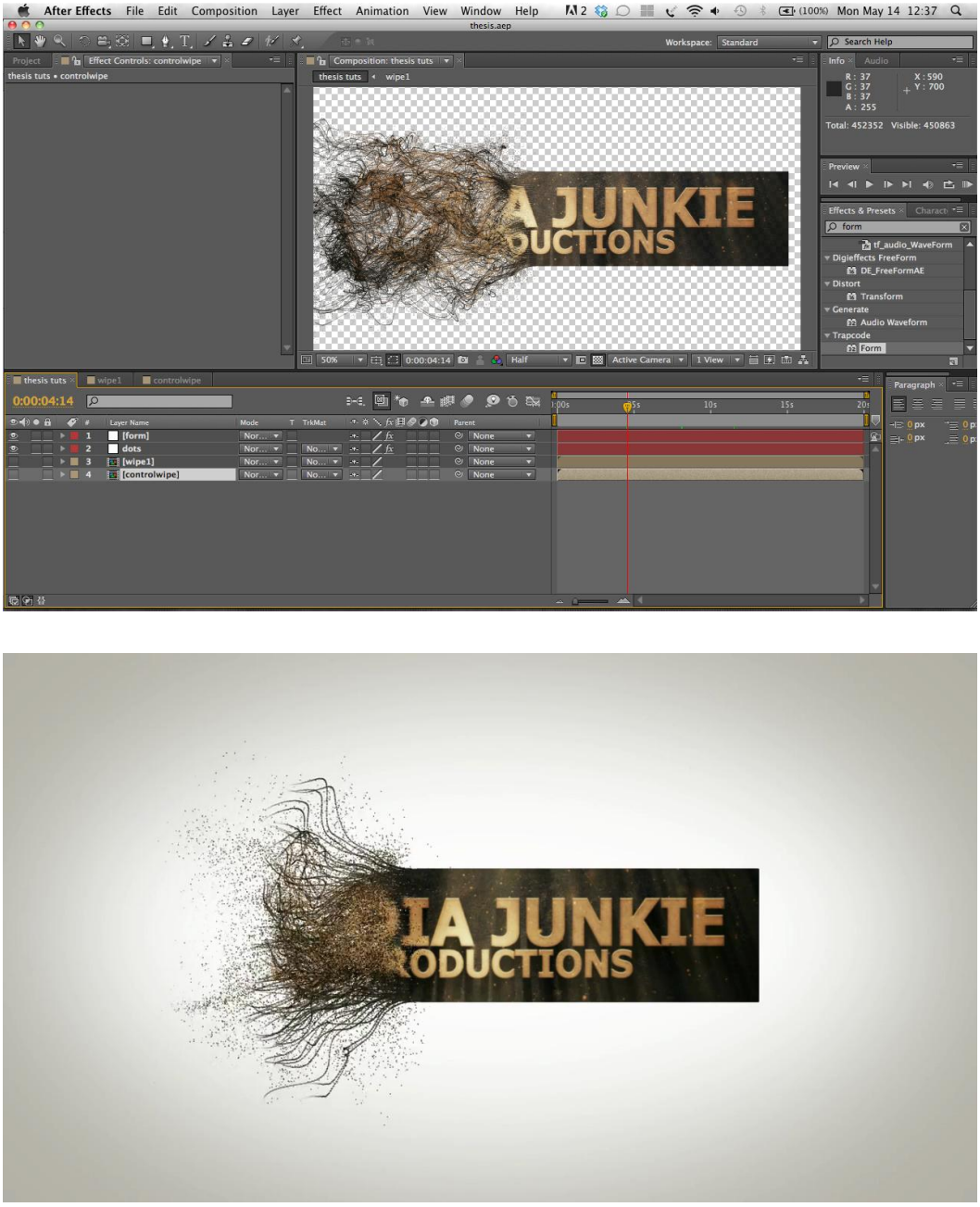

Figure 16.Before rendering and after rendering look of the final product

7. Technical Aspect

These modern techniques require very strong system requirement that is a computer that has sufficient hardware to enhance computer performance. Many people do not understand the inner workings of the computer and its motherboard and the different requirements that are needed to enhance performance. As an engineer one has to find out and understand that not only how to use a software in doing postproduction, but to also know the hardware sense of which type of components are durable and reliable for an editor or an engineer to work on without any hitches or worries of a computer ending up crushing or loosing files due to dampening.

A person has to be specific in what workstation to choose to work on and what is needed to achieve a certain product. In the case of motion graphics, Adobe After Effects is used and comes with the plugins that make the particle systems work flawless and give out results in real-time.

7.1 RAM

Also known as Random Access Memory which is very important while working on a project a software like adobe after effects requires a large memory intake thus meaning one cannot afford to use a memory that is less that 4 Gigabytes to 8 Gigabytes. This gives the program sufficient memory to run its process because the memory acts like the brain and no matter how fast the CPU (computer processing unit) is it will not matter as long as the memory is limited it will not churn out the required task efficiently.

7.2 Graphics Card

Also known as a video card is a very important multimedia component in the computer, whose main work of the graphics card is to make any data that is being input into the system convert and come up as an image. This component can either be integrated which comes with the computer and takes up a certain percentage of the main RAM this is why many people prefer to add a non integrated graphics card to enhance computer performance because it comes with its own chipped memory and not using up much of the main memory that is on the motherboard but either way in any new computer purchased graphics card is important because it deals with accelerating and making sure images or video are displayed accordingly.

After understanding what is key in coming up with motion graphics products from computer hardware to using the software itself then working on the projects will make the workflow easy to do and finalize.

8. Conclusion

Particle systems will always affect the way people model or come up with object everyone who can understand the concept of turning and setting parameters of a particle into rain water, fire or strings will definitely appreciate the simplicity of particle systems, eventually making it one of the unique elements of production in multimedia. It is quite new to many users but to those who are all about evolving and pushing the limits of imagination will take advantage of this discovery to create a new angle of different looking motion graphics production that will change the outlook and remove the doubt of many who believed that the industry would not be successful.

It comes as a plugin or a tool, so it allows other developers to come up with extraordinary forms of creating particles. In time particle systems will come in simpler forms and type. Creation of a particle form in an application like the adobe after effects only requires your knowledge of how to manipulate and change the different attributes to create a behavior, and then the future holds a much easier options to make a particle system.

The fact that in the near future techniques like the particle system should not be taken as easy tools to use it is only easy to someone who constantly uses and understands it and to attain what goal. Plugins like the particle system may look easy like, drag and dropping the plugin onto the image to achieve results, which does not make one, a professional animator or editor immediately to use such software, planning has to be done even before developing some old common techniques need to be applied for instance the hand drawn method where a story board is illustrated on paper to be used as a mock up before transferring the idea to a digital space.

A common example of needed planning is the use of a green screen where planning is intense because the crew is working from imagination before editing and visioning how the end result would look like and then elements are later combined in the post-production part, plugins to be used are usually thought throughout the creation process to determine the capability of the desired effect to be attained. In a nutshell these plugins work best if it a production has been planned well and the raw data before the post production will integrate while editing the final project. In the case of the particle system, it can do a lot more than most plugins have been known to achieve just to deliver a better complete project that is attractive to the audience. The history of motion graphics is still linked and is incorporated while developing or planning be it before production or post-production.

Technology is changing every day and with the evolution of motion graphics from the use of simple ruler, pencil and paper to interaction with the computer screen, merging normal art and defying ones imagination when it comes to creativity. This has undoubtedly become a very important production skill in small and major multimedia situations. It is normally mistaken because a person is creative; the assumption is that one becomes a master of the art automatically.

While it actually takes a lot more discipline to be one, motion graphics requires different skills that need a good combination to make the word motion graphics designer. Producing and editing a film, photography, script writer and the most important a good designer. Once a person has a position like that the designer will dictate the outcome according to his abilities because they are to execute the idea from either a drawing or a spoken or written idea to visualize and make something out of it.

These skills can also differ depending on where one is concentrating on not any designer can work on anything. Motion graphics requires one to know their specialty in order to survive the thriving market with multi-talented designers. If a designer has a project in the advertising sector, he or she is supposed to understand the market and the targeted demography. These key understandings help the designer easily create something, because they relate to them and can have a good bond to guide them through a project. People tend to think that because one is a designer they can fit anywhere maybe for a few but it is normally advised to know ones strengths and weaknesses, for a person to survive a long journey it is better to stick to your lane and know what you are doing.

Such skill is rarely found that is why the motion graphics industry will forever be evolving due to the fact that there is something new to look forward to every time, it seems intriguing to say the least. It is a market that allows all types of creativity and in today's technology; people want to see everything in motion, meaning that people want excitement in this fast paced world. This creates a sufficient market for upcoming artists to perfect an art that can only be done by a select few. There have been many doubts about the motion graphics industry. Critics claim that it was meant to diminish at a time like this, but the evolution keeps proving many of them wrong. On the course of its growth and nurturing, it has become one of the most needed and sort after technologies today it can be found anywhere and is the key to passing on information on to the public who end up viewing it.

The growth of motion graphics or as many professionals are now trying to force the name design and production, so as to make motion graphics sound limitless. The art of motion graphics has broken a lot of barriers that now it incorporates the major forms of static and dynamic designing.

This includes the merge of 3-dimensional (3D) into it and clearly stating that the evolution of motion is not diminishing, rather other art forms are depending on it for relevance. In recent developments in the last 3 to 4 years 3D has been integrated quite heavily with motion graphics clearly defining the future and giving 3D a new outlook when it comes to designing and pushing the envelope. With such developments it now contradicts the notion of one having a single skill to survive and now the future will require multiple skill and creativity to cut through the best of the best.

A new technology called Architectural projection mapping. Many call it architectural projection mapping because it is mostly projected onto building and requires the designer to actually emulate the building while coming up with objects to be mapped onto it but its general name is simply 3-Dimensional projection mapping. Its main aim is to project 3-dimensional objects on to a 2-dimensional plane this is now being taken as the future of motion graphic, which continues to break the barrier time and again.

This combines all elements discussed in the above documentation in terms of combining particle systems and normal editing of compositing images and 3-dimensional objects together, which have decorative features implemented from the particle systems to send an output to the 2-dimensional plane. Normally done on a large scale outdoor plane, commonly projected onto buildings because of their massive structures the point is to create illusions like buildings falling apart while in actual sense it is just a light projection on to the same replica building playing and not the live building in other cases lighting differently just to entertain people in a show this best works at night because it need a dark back ground to fully bring out the effect that it is real and can be touched while it cannot. .

In the case of commerce, the future creates a lot of business opportunities and also eventually saving on investment because with the new creation, people will require less use of live people who are being paid to promote a product rather this new technology can give the illusion of someone standing and actually talking to people walking by a store to intrigue them to look at something to buy. This saves on cost but also works as a double standard because now it lessens the opportunity of a person getting employed. On the bright side this is more business for motion technology companies to prove their worth with multiple skills.

Figure 17 illustrates the use of architectural projection mapping of a video game on a mansion and people admiring it.

Figure17. 3D projection mapping image, July 2009

Figure 18 shows the same building with a different effect of the building blowing up, creating the illusion to make it seem real while it is just a projection mapped on to a normal mansion.

Figure18. 3D projection mapping image, July 2009

Any development in technology in regards to multimedia involves motion graphics implementation from the usage of mobile phones, billboards with advertisements, websites promoting products and video games, which are being credited for making motion graphics relevant because of its advancement and integration of different platforms. This has led to the revolutionizing of the video game industry and how people view its evolution it relies heavily on motion graphics with the so called cel-shading technique which is mostly used to change how a game would look from a 3D object to a game or cartoon look to attract the young audience to feel comfortable while playing the games. Such techniques will not end soon because it seems to be one of the bridges taken to bring a normal 3D object and the final look to be played on a console together.

The future of motion graphics has just begun because it applies in all aspects of media and with everything being fast paced the required way to get information fast be it new, advertisement, information systems on how to find places in malls or directions, signs and interactive mediums. I would believe anything that can pass on a message in the future would require motion graphics.

This will now raise the value of well-placed designers to earn value for their services because with many entry level designer struggling to fit in the market it will saturate it but only the outstanding people will manage to make a good earning from this creating and helping the technology to evolve hence creating the next big thing. The circle will keep spinning as long as there are ideas to oil the wheel.

References

1. History of Animation [online]. Definition of animation URL: http://itp.nyu.edu/~mp51/methodsofmotion/historyofanim.html. Accessed 3 march 2012.

2. Jon Krasner. Motion Graphic Design: Applied History and Aesthetics book Elsevier Science & Technology: Oxford, United Kingdom; 2008.

3. History of Animation [online]. Eadweard Muybridge biography URL: http://en.wikipedia.org/wiki/Eadweard_Muybridge. Accessed 6 march 2012.

4. History of Animation [online]. Zoopraxiscope URL: http://en.wikipedia.org/wiki/Zoopraxiscope. Accessed 8 march 2012.

5. Zoopraxiscope [online]. Zoopraxiscope URL: http://en.wikipedia.org/wiki/File:Zoopraxiscope_16485u.jpg. Accessed 8 march 2012.

6. George melies [online]. George melies biography URL: http://en.wikipedia.org/wiki/Georges_Méliès. Accessed 8 march 2012.

7. Storyboard from MGM cartoons' huckleberry hound in 1958 [online]. Character animation URL: http://web.me.com/chong621/ChongToons/ChongToons_Blog%21/Entries/2008/11/2_Entry_1.html. Accessed 20 march 2012.

8. Stop Motion [online]. Animation Techniques URL: http://animatedtv.about.com/od/showsaz/ss/animation101.htm. Accessed 25 march 2012.

9. Oscar Award winning Stop motion film maker Nicholas Wulstan's movie the chicken run. [Online]. Ooh, Richard, what kind of evidence? URL: http://citybibleforum.org/city/brisbane/blog/ooh-richard-what-kind-evidence. Accessed 25 march 2012.

10. The Legend of Zelda game for the Nintendo GameCube in 2003 and Family Guy 2009 20th Century Fox Film Corp, Cel-shading [online]. Cel Shading: the Unsung Hero of Animation? URL: http://www.animatormag.com/computer/cel-shading-hero-animation/#.T6vPI-2figc. Accessed 30 march 2012.

11. Draw on Film [online]. Graphical Sound URL: http://dictionary.sensagent.com/graphical+sound/en-en/. Accessed 10 April 2012.

12. Draw on Film [online]. Norman McLaren Biography URL: http://en.wikipedia.org/wiki/Norman_McLaren. Accessed 10 April 2012.

13. Iman Crosson in a self-produced YouTube video [online]. Chroma key URL: http://en.wikipedia.org/wiki/Chroma_key Accessed 10 April 2012.

14. CGI [online]. A52 completes VFX for Nike Full moon URL: http://www.cgsociety.org/index.php/CGSFeatures/FeaturePrintable/a52_completes_vfx_for_nike_full_moon. Accessed 10 April 2012.

15. Computer Generated Imagery [online]. Computer animation URL: http://www.edb.utexas.edu/minliu/multimedia/PDFfolder/ComputerAnimationII.pdf Accessed 10 April 2012.

16. After effects [online]. Adobe After Effects URL: http://en.wikipedia.org/wiki/Adobe_After_Effects. Accessed 15 April 2012.

17. Particle Systems [online]. Particle Systems URL: http://code.google.com/a/eclipselabs.org/p/khaky-birds/wiki/ParticleSystem. Accessed 15 December 2011.

18. Particle Systems, emitter [online]. Particle Systems URL: http://www.encyclopedia.com/doc/1O11-particlesystem.html. Accessed, 15 December 2011.

19. Particle Systems, rendering [online]. Particle systems, Rendering stage URL:

http://en.wikipedia.org/wiki/Particle_system#Rendering_stage. Accessed 15 December 2011.

20. Metaballs [online]. Glossary of terms "M" URL: http://www.landscapemodeling.org/html/glossary_of_terms/glossary.htm#m. Accessed 15 December 2011.

21. Architectural projection mapping [online]. 3D projection URL: http://en.wikipedia.org/wiki/3D_projection. Accessed 5 March 2012.

22. 3D projection mapping image [online]. 3d-projection-mapping-future-motion graphics URL:

http://trend-forward.blogspot.com/2011/06/3d-projection-mapping-future-of.html. Accessed 5 March 2012.

23. Francois Fluckiger. Understanding Networked Multimedia: Application and Technology: London, Great Britain; 1995.

24. Computers [online]. Components that enable the performance of the entire computer system URL: http://www.articlesbase.com/computers-articles/computer-components-that-enable-the-performance-of-the-entire-computer-system-5895129.html. Accessed 10 October 2012.